Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Date Mailed: 12/14/2001

Figure 1

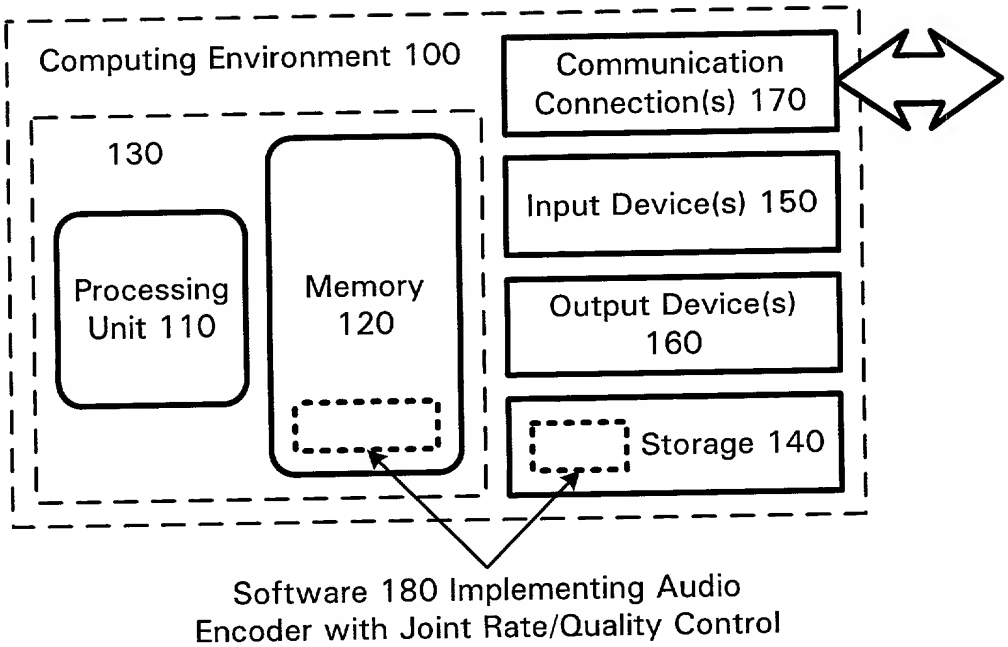


Figure 7a

$$f_3(B_F, B_{FSP}) = \begin{cases} 0.8 & 0.95 < B_F \\ 0.8 & 0.9 < B_F \le 0.95 \\ 0.75 & 0.85 < B_F \le 0.9 \\ 0.7 & 0.8 < B_F \le 0.85 \\ 0.65 & 0.75 < B_F \le 0.8 \\ 0.6 & 0.7 < B_F \le 0.75 \\ 0.55 & 0.65 < B_F \le 0.7 \\ 0.45 & 0.6 < B_F \le 0.65 \\ 0.45 & 0.55 < B_F \le 0.6 \\ 0.45 & 0.5 < B_F \le 0.55 \\ 0.5 & 0.4 < B_F \le 0.5 \\ 0.5 & 0.3 < B_F \le 0.4 \\ 0.4 & 0.2 < B_F \le 0.3 \\ 0.4 & 0.1 < B_F \le 0.2 \\ 0.4 & B_F \le 0.1 \end{cases}$$

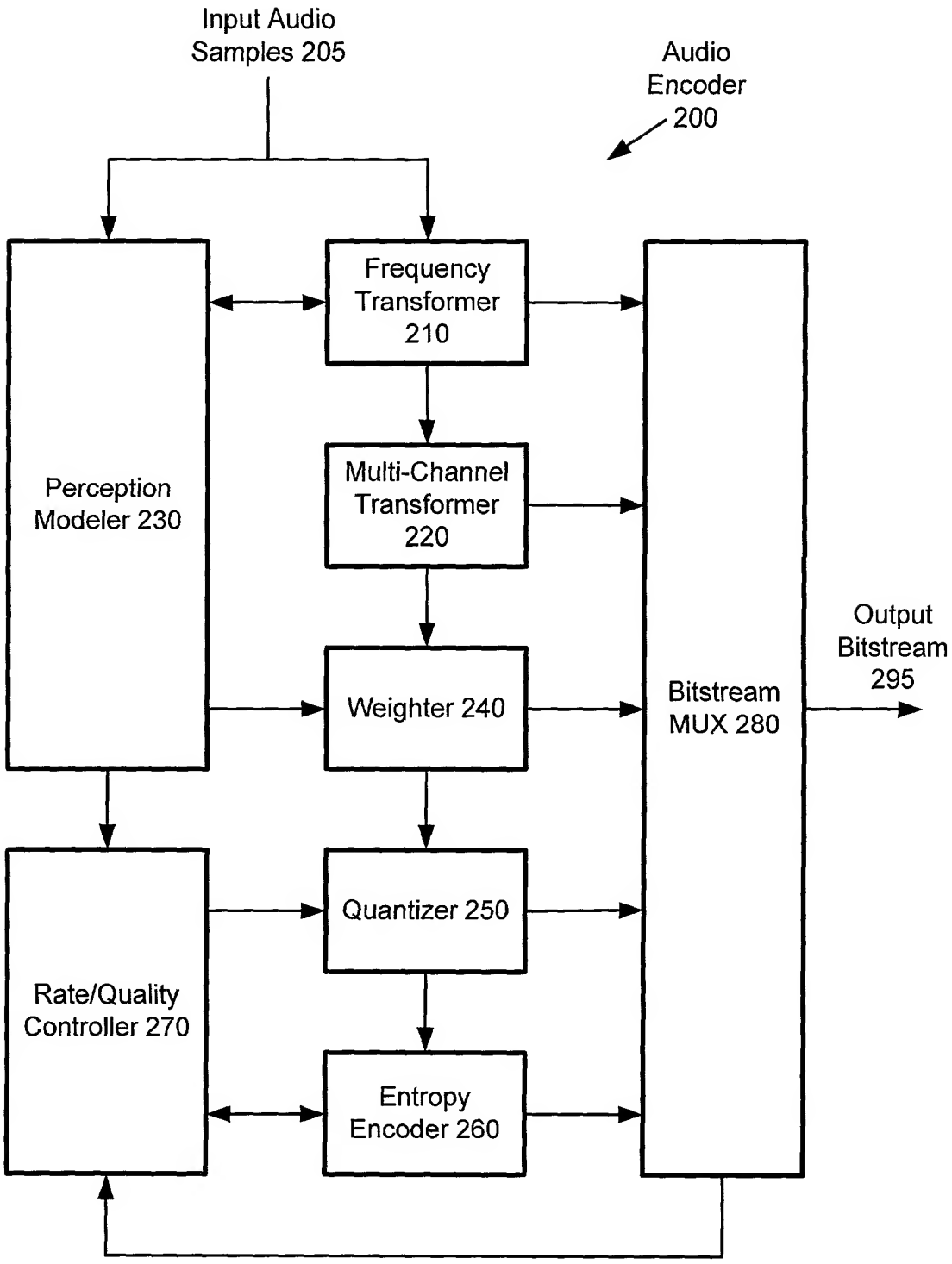
Figure 7b

$$f_3(B_F, B_{FSP}) = \begin{cases} 0.8 & 0.95 < B_F \\ 0.8 & 0.9 < B_F \le 0.95 \\ 0.75 & 0.85 < B_F \le 0.9 \\ 0.7 & 0.8 < B_F \le 0.85 \\ 0.65 & 0.75 < B_F \le 0.8 \\ 0.65 & 0.7 < B_F \le 0.75 \\ 0.65 & 0.65 < B_F \le 0.7 \\ 0.65 & 0.6 < B_F \le 0.65 \\ 0.65 & 0.55 < B_F \le 0.6 \\ 0.6 & 0.5 < B_F \le 0.55 \\ 0.55 & 0.4 < B_F \le 0.5 \\ 0.5 & 0.3 < B_F \le 0.4 \\ 0.4 & 0.2 < B_F \le 0.3 \\ 0.4 & 0.1 < B_F \le 0.2 \\ 0.4 & B_F \le 0.1 \end{cases}$$

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

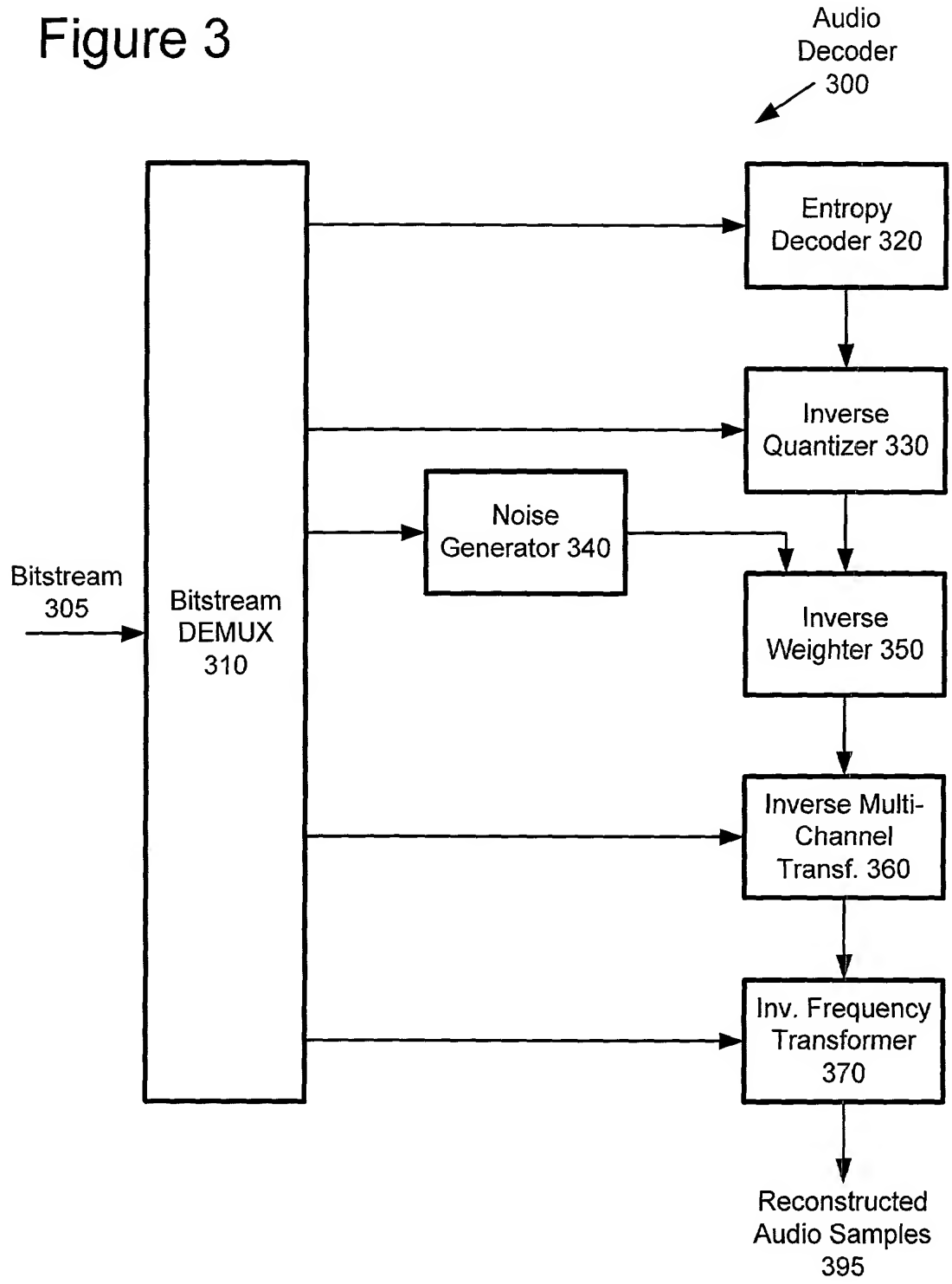
Figure 2



Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

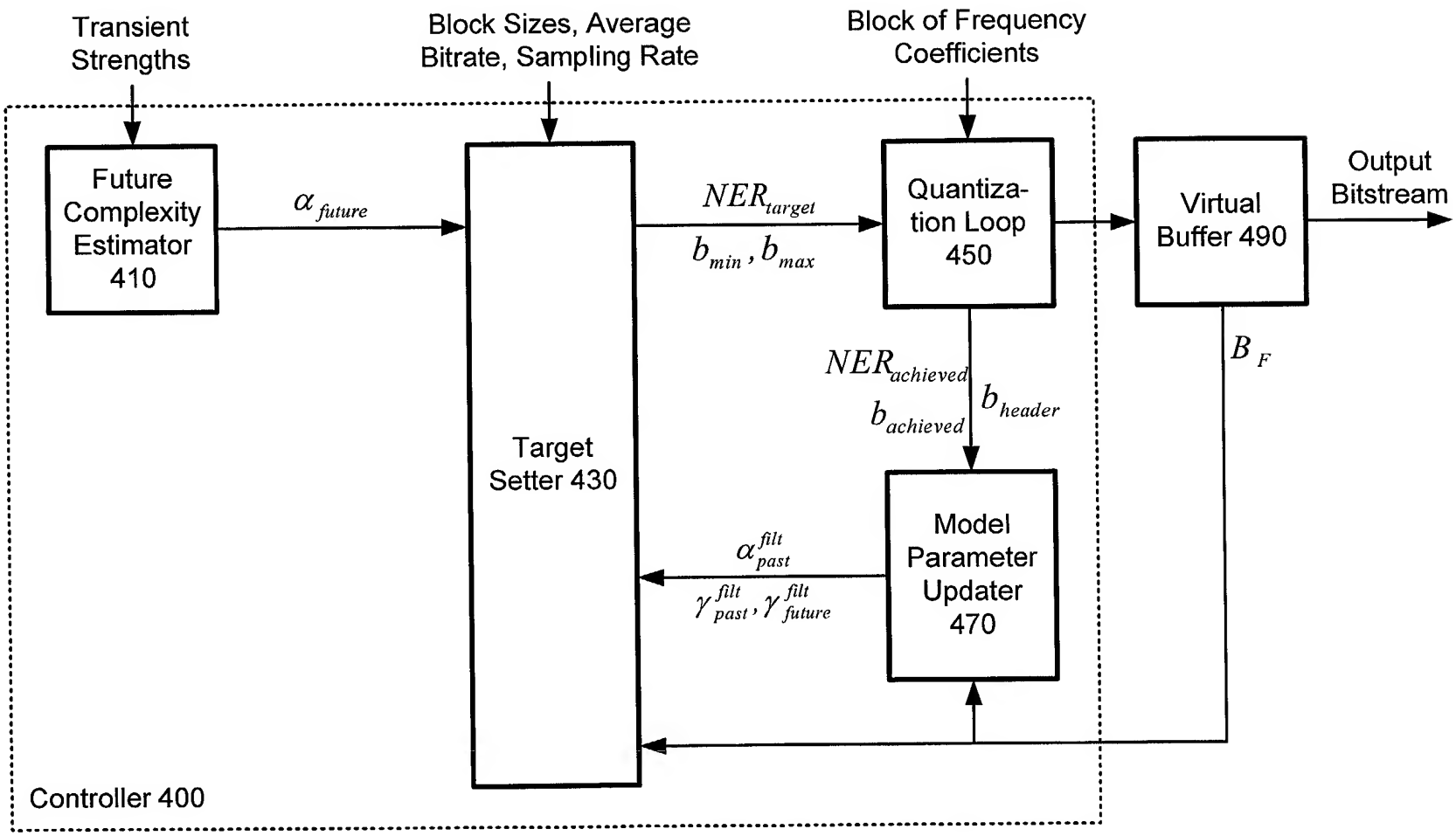
Figure 3



Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Figure 4



Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Figure 5a

$$f_1(B_F, B_{FSP}, N_c, N_{Max}) = \begin{cases} 10 & B_F \le 0.1 \\ 8 & 0.1 < B_F \le 0.2 \\ 6 & 0.2 < B_F \le 0.3 \\ 6 & 0.3 < B_F \le 0.7 \,\&\&\, N_c \ne N_{Max} \\ 3.5 & 0.3 < B_F \le 0.7 \,\&\&\, N_c = N_{Max} \\ 4.0 & 0.7 < B_F \,\&\&\, N_c \ne N_{Max} \\ 2.25 & 0.7 < B_F \,\&\&\, N_c = N_{Max} \end{cases}$$

Figure 5b

$$f_1(B_F, B_{FSP}, N_c, N_{Max}) = \begin{cases} 10 & B_F \le 0.1 \\ 8 & 0.1 < B_F \le 0.2 \\ 6 & 0.2 < B_F \le 0.3 \\ 4 & 0.3 < B_F \le 0.7 \,\&\&\, N_c \ne N_{Max} \\ 2.25 & 0.3 < B_F \le 0.7 \,\&\&\, N_c = N_{Max} \\ 2.0 & 0.7 < B_F \,\&\&\, N_c \ne N_{Max} \\ 1.25 & 0.7 < B_F \,\&\&\, N_c = N_{Max} \end{cases}$$

Figure 6

$$f_2(B_F, B_{FSP}, N_c, N_{Max}) = \begin{cases} 0.35 & B_F \le 0.65 \,\&\&\, 2 \cdot N_c \ge N_{Max} \\ 0.25 & 0.65 < B_F \,\&\&\, 2 \cdot N_c \ge N_{Max} \\ 0.55 & B_F \le 0.65 \,\&\&\, 8 \cdot N_c \ge N_{Max} \\ 0.45 & 0.65 < B_F \,\&\&\, 8 \cdot N_c \ge N_{Max} \\ 0.85 & B_F \le 0.65 \,\&\&\, 16 \cdot N_c \ge N_{Max} \\ 0.65 & 0.65 < B_F \,\&\&\, 16 \cdot N_c \ge N_{Max} \end{cases}$$

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Figure 8a

$$f_4(B_F, B_{FSP}) = \begin{cases} 6 & 0.95 < B_F \\ 10 & 0.9 < B_F \le 0.95 \\ 15 & 0.85 < B_F \le 0.9 \\ 25 & 0.8 < B_F \le 0.85 \\ 30 & 0.75 < B_F \le 0.8 \\ 40 & 0.7 < B_F \le 0.75 \\ 50 & 0.65 < B_F \le 0.7 \\ 60 & 0.6 < B_F \le 0.65 \\ 60 & 0.55 < B_F \le 0.6 \\ 60 & 0.5 < B_F \le 0.55 \\ 30 & 0.4 < B_F \le 0.5 \\ 30 & 0.3 < B_F \le 0.4 \\ 18 & 0.2 < B_F \le 0.3 \\ 18 & 0.1 < B_F \le 0.2 \\ 18 & B_F \le 0.1 \end{cases}$$

Figure 8b

$$f_4(B_F, B_{FSP}) = \begin{cases} 6 & 0.95 < B_F \\ 6 & 0.9 < B_F \le 0.95 \\ 15 & 0.85 < B_F \le 0.9 \\ 15 & 0.8 < B_F \le 0.85 \\ 30 & 0.75 < B_F \le 0.8 \\ 30 & 0.7 < B_F \le 0.75 \\ 30 & 0.65 < B_F \le 0.7 \\ 60 & 0.6 < B_F \le 0.65 \\ 40 & 0.55 < B_F \le 0.6 \\ 20 & 0.5 < B_F \le 0.55 \\ 20 & 0.4 < B_F \le 0.5 \\ 20 & 0.3 < B_F \le 0.4 \\ 18 & 0.2 < B_F \le 0.3 \\ 18 & 0.1 < B_F \le 0.2 \\ 18 & B_F \le 0.1 \end{cases}$$

Figure 16

$$bias_correction = \max((0.75 \cdot b_{Header}), (0.0625 \cdot b_{Achieved}))$$

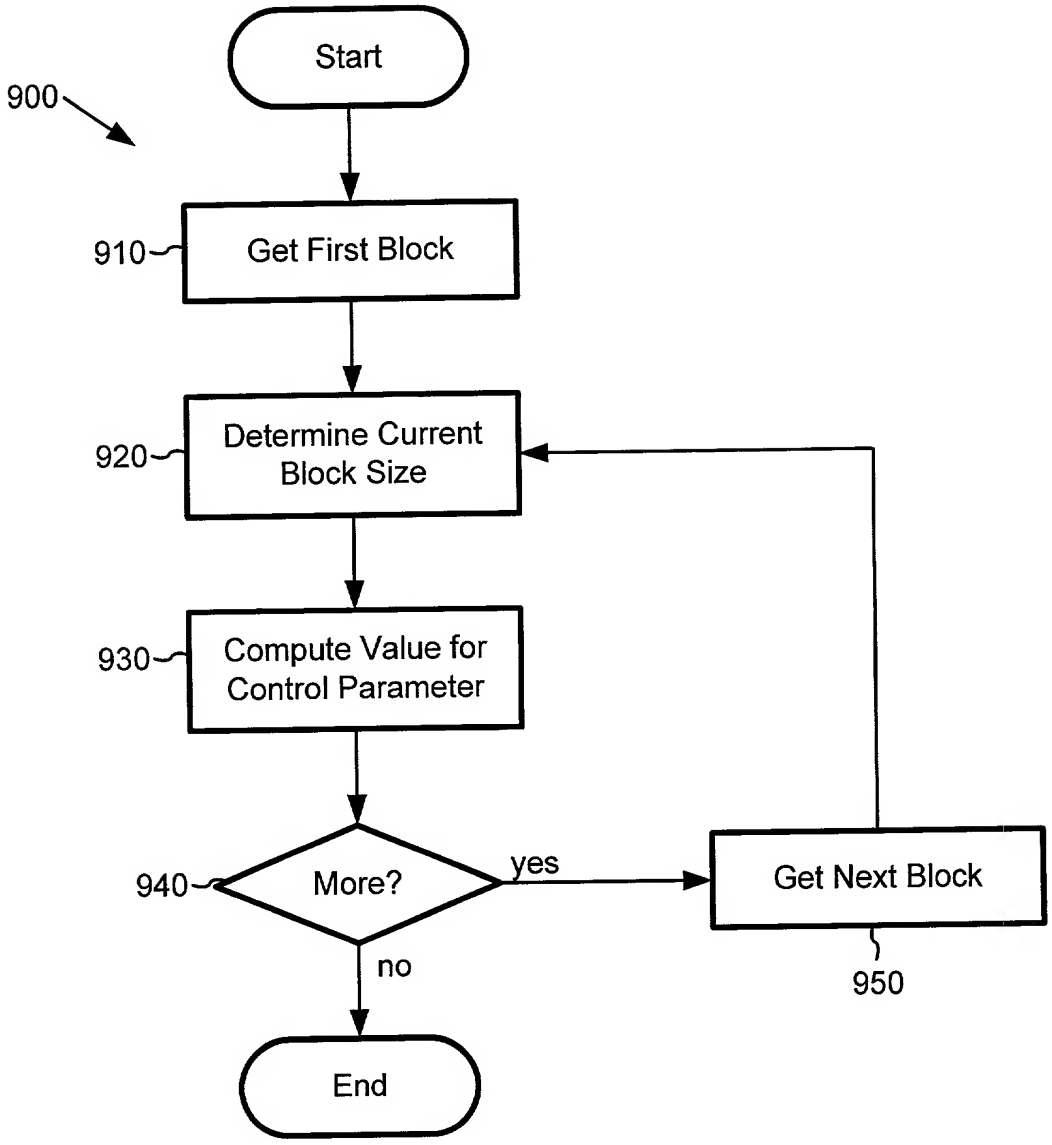
$$f_5(...) = \begin{cases} -bias_correction & ((B_{FSP} \le 0.5) \,\&\&\, (B_F < 0.4)) \,\|\, ((B_{FSP} > 0.5) \,\&\&\, (B_F < 0.55)) \\ bias_correction & ((B_{FSP} \le 0.5) \,\&\&\, (B_F > 0.6)) \,\|\, ((B_{FSP} > 0.5) \,\&\&\, (B_F > 0.75)) \\ 0 & otherwise \end{cases}$$

Patent-pending

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Figure 9



10h121"h6921001

Figure 10

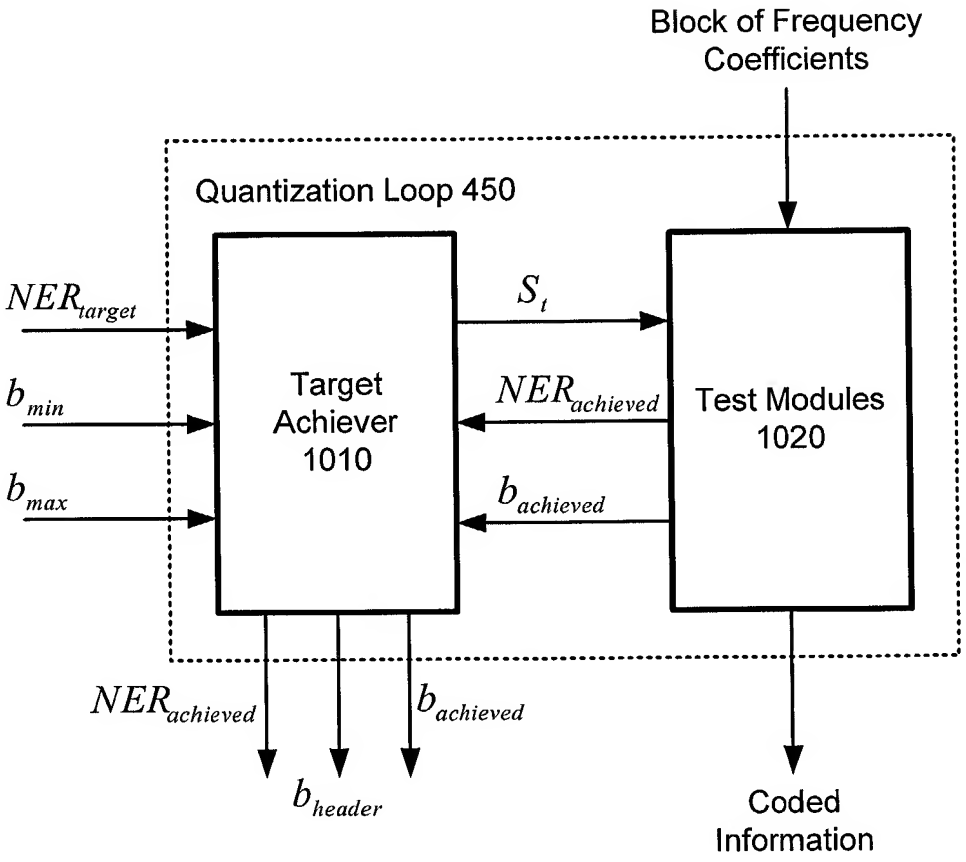
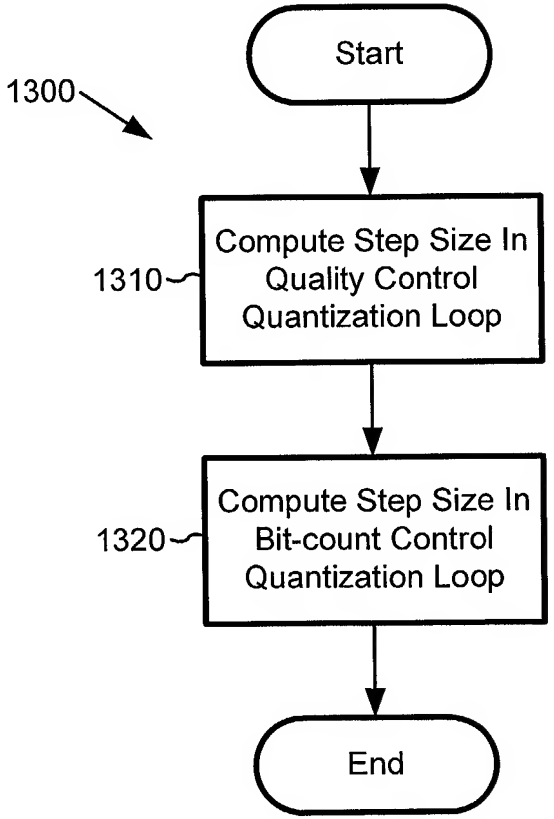


Figure 13



Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Figure 11

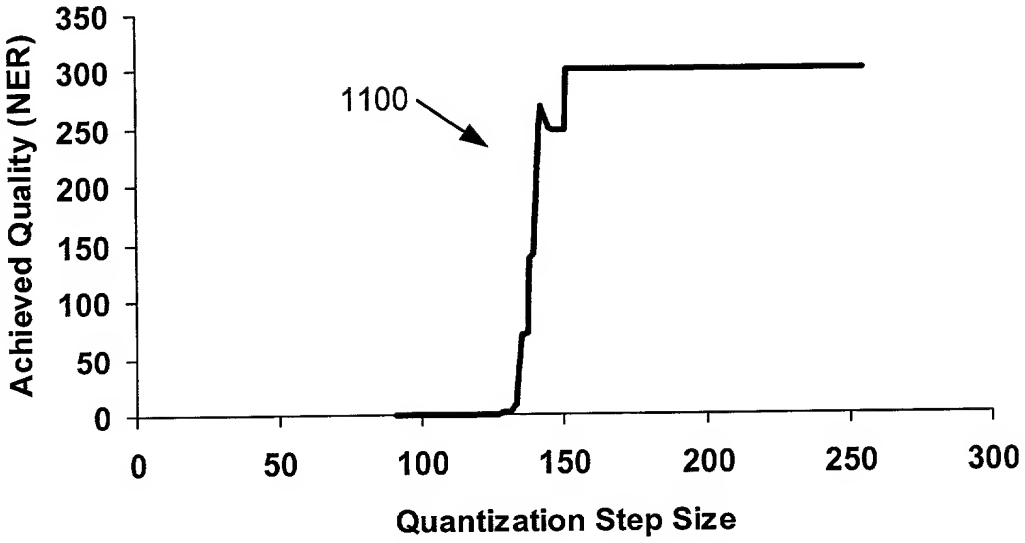
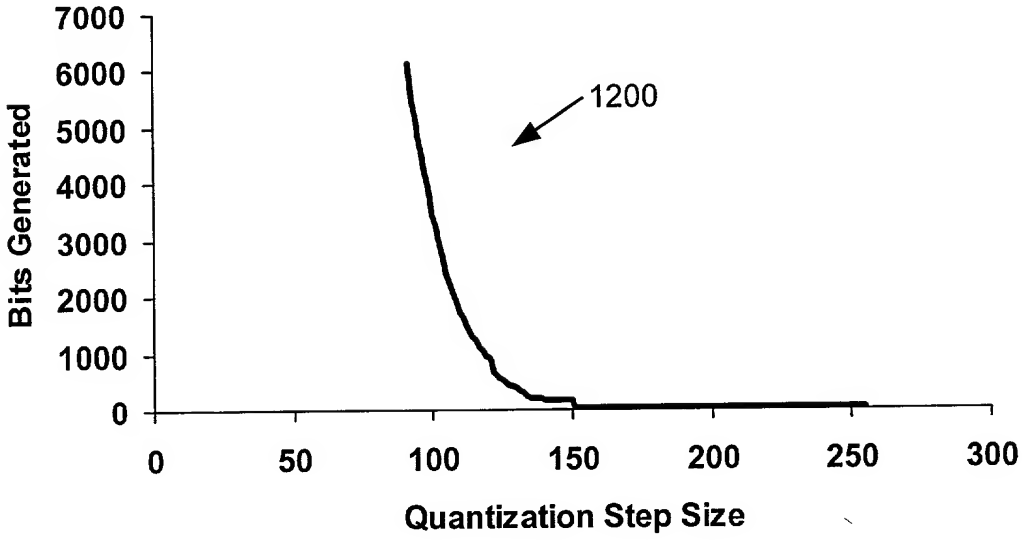


Figure 12

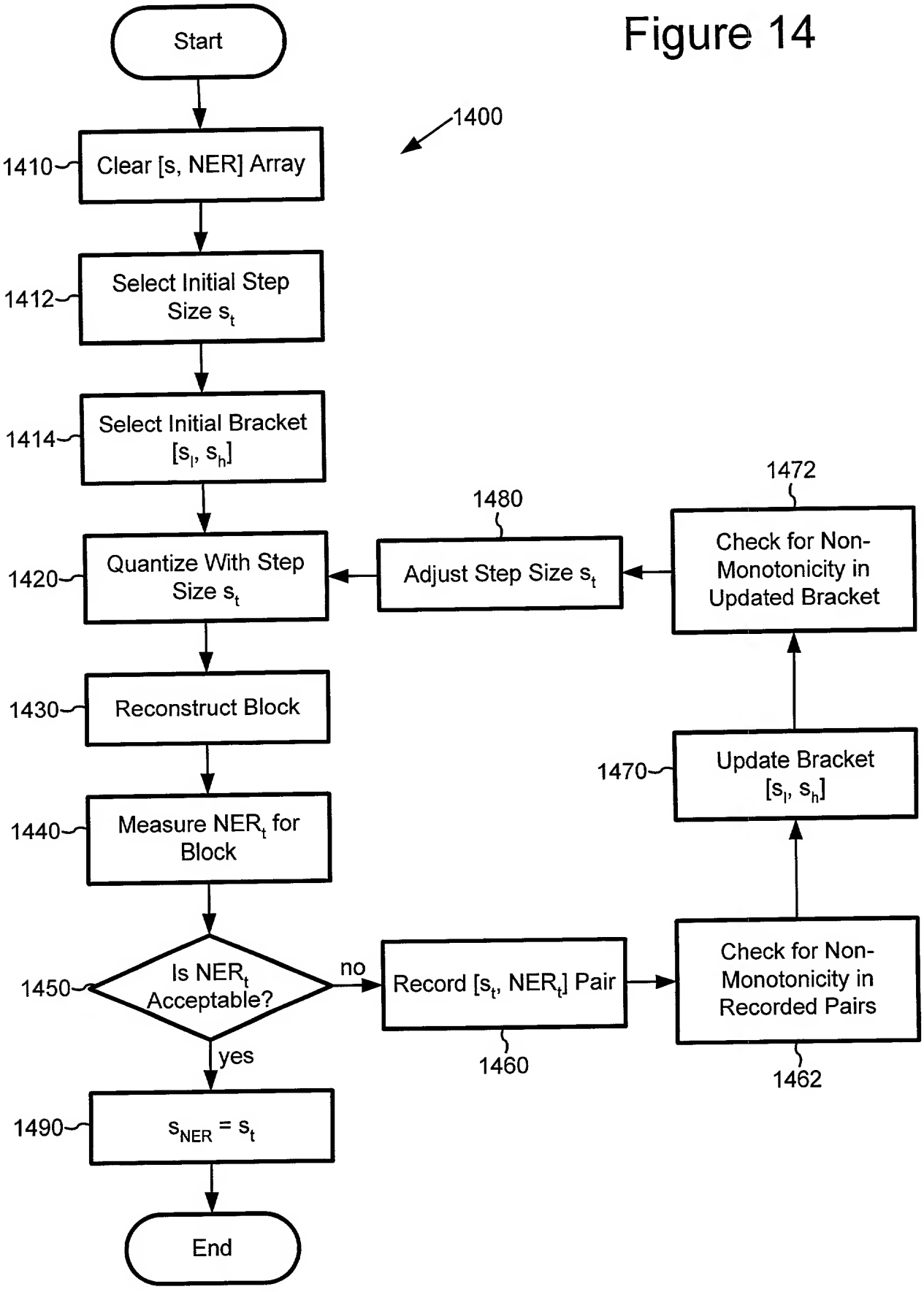


Patent Application

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

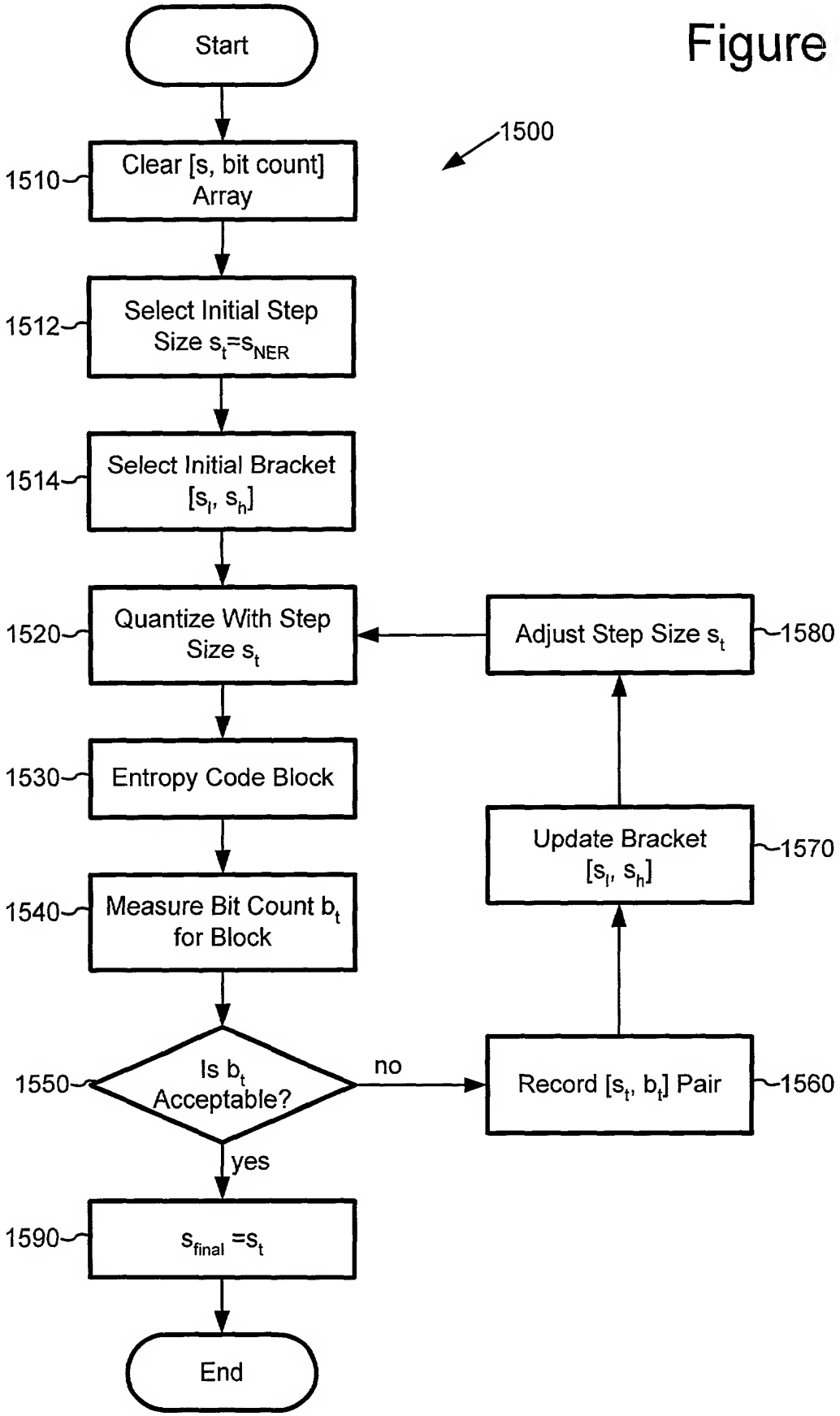
Figure 14



Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

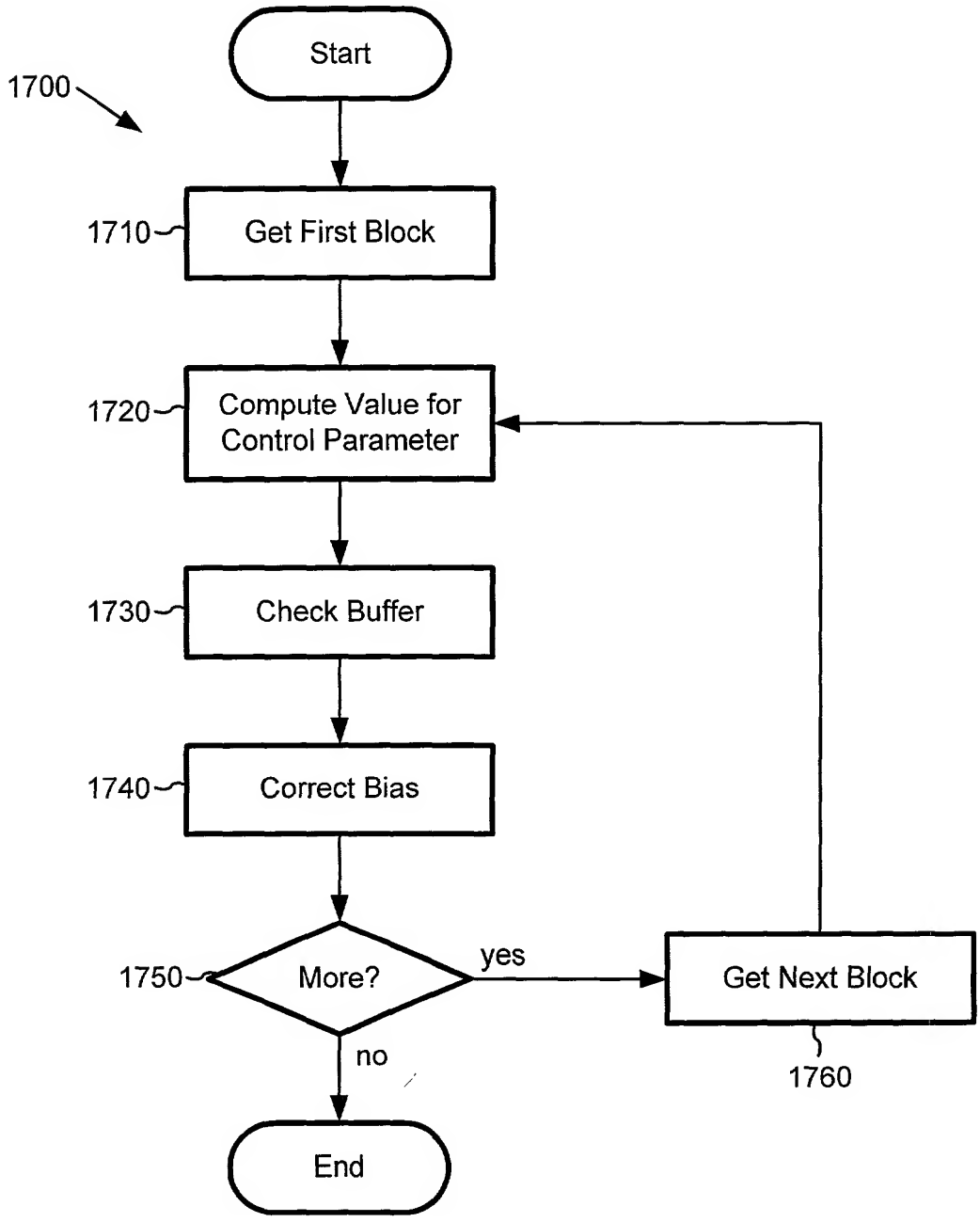
Figure 15



Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

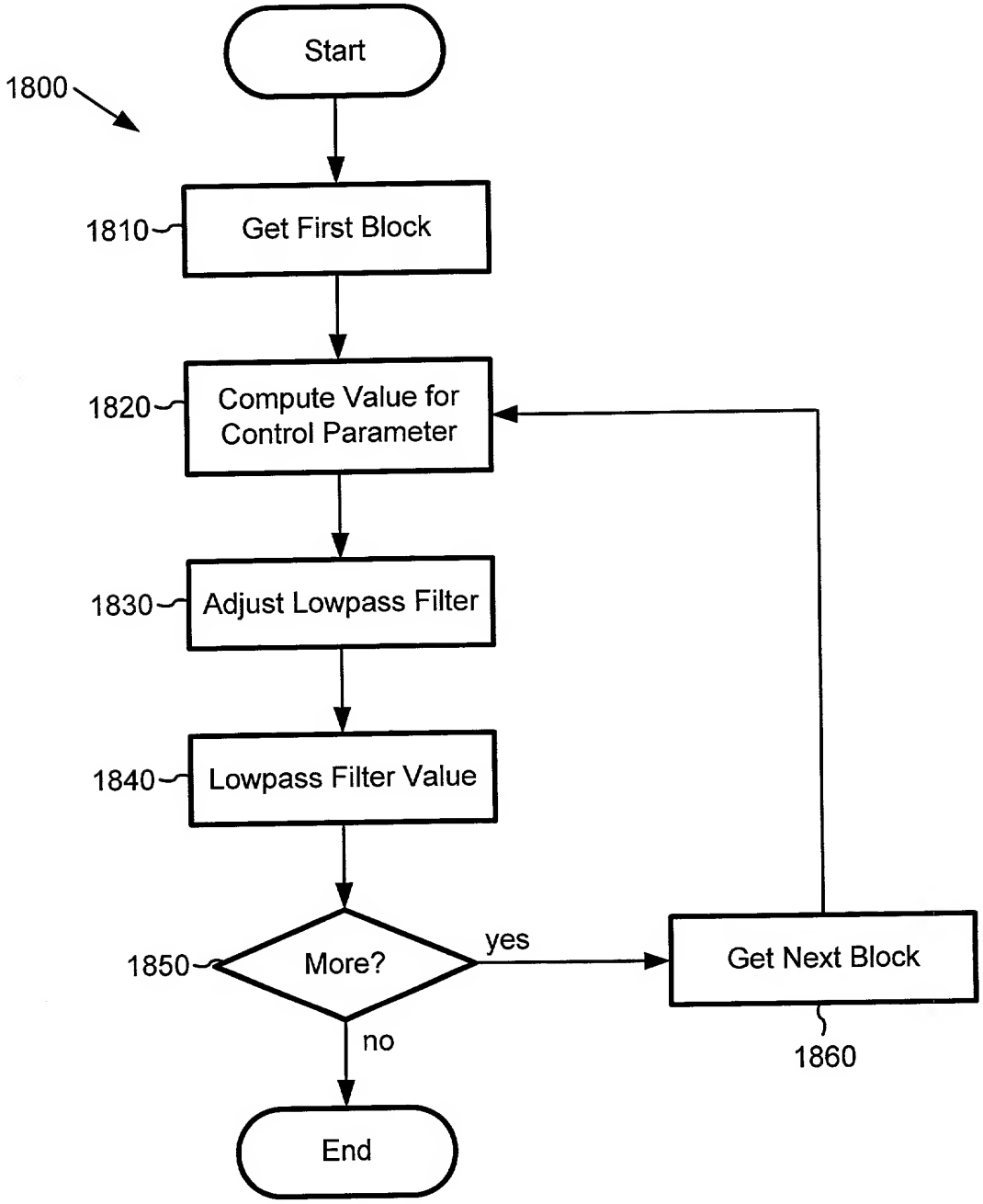
Figure 17



Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed: December 14, 2001

Figure 18



Express Mail No. EL828140985US